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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,540	09/17/2001	Mats Danielsson	GPD0021-US	5619

28694 7590 05/22/2003

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EXAMINER

SONG, HOON K

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/682,540

Applicant(s)

DANIELSSON, MATS

Examiner

Hoon K Song

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-17 and 23-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15, 16 and 23-39 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 23-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Cusano et al. (US 4873708).

Regarding claim 23, Cusano teaches an arrangement for detecting X-ray radiation comprising;

a carrying member (28) having detectors (44) on a side thereof, said detectors including plurality of sensors (46) provided on a substrate;

said detectors being arranged substantially edge-to-edge and side-by-side in at least one row on said side of carrying member (figure 2 and 3); and

said detectors comprising a sensor plane being substantially parallel to a surface of said carrying member and said carrying member being arranged so that said sensor plane is angularly oriented otherwise than perpendicular to incident X-ray beams (figure 1, 2 and 3), and

wherein at least two detectors are arranged in at least two levels, said levels being displaced relative one to the others and such that an inactive section of at least one detector is overlapped with an active section of another detector (figure 3).

Regarding claim 24, Cusano teaches that said sensor plane is arranged in parallel to incident X-ray beams (figure 1, 2 and 3, column 7 line 45+).

Regarding claim 25, Cusano teaches that said carrying member is tilted to arrange said sensor plane in said angle (figure 3).

Regarding claim 26, Cusano teaches that said detector is arranged on a supporting member (figure 2 and 3).

Regarding claim 27, Cusano teaches that the detectors are further comprised of a scintillator optically connected to a CCD, silicon diodes, gaseous detector, a parallel plate chamber where the gas volume is oriented edge-on to the incident X-ray's (column 7 line 45+).

Regarding claim 28, Cusano teaches an X-ray apparatus comprising:
an essentially planar member (18) of a material non-transparent to X-rays,
having an elongated slot formed therein,

an array of detectors (44) provided in communication with said slots and
arranged to detect rays and for providing a signal representing the intensity of said X-rays imaging thereon,

a moving arrangement configured to move a beam directing member relative to
an object to be X-ray examined (figure 1);

said detector array further comprising individual detectors (46) positioned substantially in parallel with at least one carrying member;

each detector arranged on a face of a carrying member and comprising a plurality of sensors provided on a substrate, said detectors being arranged substantially edge-to-edge and side-by-side on said face of said carrying member (figure 3); and

each detector comprising a sensor plane, said sensor plane being substantially parallel to a surface of said carrying member and said carrying member being arranged so that said sensor plane is angularly oriented otherwise than perpendicular to incident x-ray beams (figure 1, 2 and 3, column 7 line 45+).

Regarding claim 29, Cusano teaches that at least two detectors are arranged in at least two levels, said levels being displaced relative one to the others and such that an inactive section of at least one detector is overlapped with an active section of another detector (figure 3).

Regarding claim 30, Cusano teaches that each of said detectors has sensor plane, said sensor plane being arranged at an angle other than perpendicular to incident X-ray beams (figure 1, 2 and 3, column 7 line 45+).

Regarding claim 31, Cusano teaches that each of said detectors has a sensor plane, said sensor plane being arranged in parallel with incident X-ray beams (figure 1, 2 and 3, column 7 line 45+).

Regarding claim 32, Cusano teaches that said beam directing member includes slots arranged in at least two rows, and said slots in each row are displaced relative each other.

Regarding claim 33, Cusano teaches that said beam directing member is one of a refracting and focusing member (18).

Regarding claim 34, Cusano teaches that means for acquiring data from said detector arrays at intervals corresponding to a fraction of a width of said detector arrays (figure 1).

Regarding claim 35, Cusano teaches that said sensors of said detector arrays are made of silicon wafers oriented substantially edge-on to incident X-rays (figure 2 and 3).

Regarding claim 36, Cusano teaches a method for X-ray scanning comprising the steps of:

providing an X-ray apparatus having an essentially planar member of a material non-transparent to X-rays, having an elongated slot formed therein,

a detector array provided in communication with said slots and arranged to detect -rays and for providing a signal representing the intensity of said X-rays imaging thereon, a moving arrangement configured to move a beam directing member relative to an object to be X-ray examined;

said detector array further comprising individual detectors positioned substantially in parallel with at least one carrying member; each detector arranged on a face of a carrying member and comprising a plurality of sensors provided on a substrate, said detectors being arranged substantially edge-to-edge and side-by-side on said face of said carrying member; and

each detector comprising a sensor plane. said sensor plane being substantially

parallel to a surface of said carrying member and said carrying member being arranged so that said sensor plane is angularly oriented otherwise than perpendicular to incident x-ray beams; (see above rejection)

starting a scan;

positioning said slots and corresponding detectors substantially outside a field of view (object) when the scan starts;

passing substantially all slots and corresponding detectors over and object to be X-rayed and thus establishing said field of view;

measuring scan X-ray fluxes together with position coordinates for all detectors; and terminating the scan only after all slots and corresponding detectors are substantially outside the field of view (object) (figure 1, column 7 line 45+).

Regarding claim 37, Cusano teaches that incrementing the scanning at least a distance corresponding to s fraction of a distance of the detectors arrangements (column 7 line 45+).

Regarding claim 38, Cusano teaches that the scan is continuous and a readout of data is performed at intervals corresponding to a fraction of a distance between the detector arrangements (column 7 line 45+).

Regarding claim 39, Cusano teaches that readout data for each increment and for each sensor array is stored as data arrays, and wherein said stored data for each sensor array is separately combined to form an image, and wherein images obtained by each sensor array are superposed to form a final image (column 7 line 45+).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cusano et al. (US 4873708).

Regarding claim 15, Cusano teaches that a method for scanning in an X-ray apparatus comprising:

an essentially planar member (18) of a material non-transparent to X-rays, having an elongated slot formed therein,

an array of detectors (28) provided in communication with said slots and arranged to detect rays and for providing a signal representing the intensity of said X-rays imaging thereon,

means for moving (26) a beam directing member and an object to be examined relative each other,

wherein said array of detectors comprises substantially in parallel arranged detector arrangements consisting of one or several carrying members, each arranged on at least one face with detectors comprising a plurality of sensors provided on a substrate, and wherein said detectors are arranged substantially edge to edge and side by side at least one side of said carrying member (figure 2 and 3),

wherein the method comprises the steps of:

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arranging a first part of collimators (18) before start of the scanning in a field of view while the second part of the collimators (12) are outside the field of view,

starting the scan from a first position and said collimators (start acceleration),

bringing the said collimators and when all collimators and detectors are in the field of view (object),

and

when the first collimator is outside the field of view, bringing the said collimators and detectors (stop).

However Cusano merely teaches that the collimator and detector are moving in first speed, second speed and third speed.

Although Cusano fails teach the above speed, one having ordinary skill in the art would obviously notice that in motor system there are always start acceleration, constant speed and stopping deceleration. Thus, Cusano's reference also teaches the three speed of the operating the identical system (column 7 line 45+).

Regarding claim 16, Cusano teaches that the further step of stopping the scan when said second part of the collimators are outside the field of view (patient, column 7 line 45+).

Allowable Subject Matter

The indicated allowability of claims 15-17 is withdrawn in view of the newly discovered reference(s) to Cusano et al. Rejections based on the newly cited reference(s) follow.

Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 15-17, 23-39 have been considered but are moot in view of the new ground(s) of rejection.

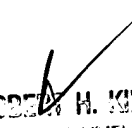
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon K Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-4858 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon Song
May 19, 2003


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